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Lockington, William N.

Crustacea. (Binder's title).

INVERTEBRATE
ZOOLOGY
Crustacea



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From the Proceedings of the California Academy of Sciences, July 17th, 1876.

Remarks on the Crustacea of the Pacific Coast of North America, including a Catalogue of the Species in the Museum of the California Academy of Sciences, San Francisco.

BY W. N. LOCKINGTON.

The collection of Crustacea belonging to this institution is tolerably complete as regards the species inhabiting the Pacific Coast from Cape St. Lucas northwards, and also includes many forms from Oceania and the Indo-Pacific, but is deficient in Atlantic, African and Australian forms.

The Pacific Island specimens are, for the most part, the gift of Andrew Garrett; while those from this coast, to which these remarks are confined, have been presented chiefly by W. J. Fisher, Hy. Hemphill, Hy. Edwards and W. G. W. Harford.

MAIOIDEA.

The want of a good scientific library on this coast is severely felt by any one who attempts to describe a new species, and I have never felt it more acutely than when endeavoring to marshal in their proper places the numerous novelties belonging to this group of Crustacea that have been brought from the Gulf of California by Mr. W. J. Fisher.

Without type specimens of any of the European or Atlantic coast genera, with abridged descriptions of many genera, and nothing but incidental allusions to others, coupled by a reference to works inaccessible to me, the task of identification is a hard one, and I therefore crave indulgence if, in one or two cases, a new genus has been founded where an old one would have fitted, or a species has been described as new because I have not seen the description.

The total number of species of Maioid crabs now known upon this coast, including the *Parthenopidae*, two or three forms that may possibly be synonymous, and one, the locality of which is doubtful, is thirty-nine, of which nineteen only are included in Stimpson's "Crustacea and Echinodermata of the Pacific Coast N. A.," published in 1857.

Eleven new species are described in this paper.

FAMILY MAIIDÆ.

Sub-fam. INACHINÆ.

1. *Microhynchus (Inachus) tuberculatus*. Lockington. Proc. Cal. Acad. Sci. Feb. 7, 1876.

The rostrum in this species is entire, whereas in *Inachus scorpio* it is emarginate and shorter; moreover, the proportionate lengths of the second pair and the carapax are rather those of *Microhynchus* than of *Inachus* (as given by Dana.)

The present species does not appear to be very abundant, as Mr. Fisher obtained only two specimens on the West coast of Lower California.

No. 1. Two specimens, male and female, dried. San Diego. Hy. Hemp-hill.

2. *Chionoecetes Behringianus*. Stimpson. Crust. and Echinodermata Pac. Shores N. A., p. 8. At 80 fathoms, off Cape Romanoff.

PSIDÆ.

3. *Hyas latifrons*. Stimpson. Prod. Animal. Evert. Ocean, Pac. Septen., 24.

Like *H. coarctatus* but with the body shorter, wider in front, less tuberculated above, and with obtuse angles; the rostrum shorter and less acute, and the fissure of the superior margin of the orbit closed.

Common in Behring's Straits.

The Cal. Acad. Sci. possesses a single specimen of this species.

No. 1a. Alaska, dried. W. J. Fisher.

4. *H. lyrratus*. Dana. Crust. U. S. Ex. Exp. 1, p. 86, plate 1, fig. 1. Stimpson. Crust. and Echi. Pac. Shores N. A., 10.

Deep water on the coast of Oregon.

5. *H. coarctatus*. Leach. Malac. Pod. Brit. pl. XXI, b. Milne Edwds. Hist. Nat. des Crust. 1, 312. Brandt. Sibirische Reise, 1, 79. Stimpson. Crust. and Echi. Pac. Shores N. A., 10. Behring's Straits.

Herbstia parvifrons. Randall. Jour. Acad. Nat. Sci. Phil., VIII, 109. Gibbes, Proc. Amer. Assoc. for Advancement Sci., 170. Stimpson. C. & E. P. C. N. A.

Dr. Randall's description of this species is very imperfect. Stimpson and Gibbes give no description, but simply refer to the specimen in the Philadelphia Cabinet. "Western America, Nuttall."

It is not improbable that one of the species described further on may be identical with this.

7. *Platytes edentata*. *= Thoe sulcata* 3^l Lockington. Proc. Cal. Acad. Sci., March 20, 1876. La Paz, 3 fms. Port Escondido, Mulege Bay. Mazatlan.

By an error in my original description, the "manus" of the first pair of limbs was stated to be alveolate on its upper edge. It is the merus that is alveolate. The extremely broad depressed appearance of the four hinder pairs is mainly due to the abundant tomentosity of their anterior and posterior margins, yet the limbs themselves are considerably flattened.

The first pair of limbs, in alcoholic specimens, are of a bright, shining carmine tint. The shape of the carapax is that of the *Pisinae*, but the bifid rostrum renders its position doubtful.

No. 12. Female and two young specimens, dried. Mazatlan. Hy. Edwards.

No. 18. Male and female, in spirits. Gulf of California. Fisher and Lockington.

8. *Loxorhynchus grandis*. Stimpson. Crust. and Echi. Pac. S. N. A., 12.

Stimpson says of this species, "taken off the coast of California, near San Francisco." I have never heard of this crab in this locality, and it is never brought to market.

The Museum of the Cal. Acad. Sci. possesses two dried specimens, one, a male, from Santa Barbara, the other, a female, from Santa Catalina Island.

No. 10. Male. Santa Barbara. Mr. Lorquin.

No. 11. Female. Santa Catalina Island.

9. *Loxorhynchus crispatus*. Stimpson. Crust. and Echino. P. S. N. A., 13. I have not seen this species.

10. *Homalacantha hirsuta*. Hale Streets. Proc. Acad. Nat. Sci. Phil., 1871, 238.

Panama.

Aia nov. gen.

Rostrum bifid to base, deflected downwards; fixed joint of outer antennæ broad, the outer apex continued into a long spine in the same plane with the

rostrum. Antero-lateral teeth triangular, the two posterior forming a broad wing-like expansion.

The proper place of this genus is evidently among the *Pisinae*, and its affinities with *Rhodia* (Bell) and *Herbstia* (Edwards), but the form of the carapax and of the first joint of outer antennae does not agree with either, while from the former it differs in having the first pair slightly longer than the second; and from the latter (at least from *H. cordylata*,) in the presence of a pre-orbital spine.

11. *Ala spinosa*. nov.-sp. = *Anaptychus cornutus* St

Carapax with broad lateral expansions rendering it wider than long. Rostrum, bifid, shorter than the base of the external antennae. Movable basal points of antennae short. A long spine, exterior to the antennal base, projecting nearly as far forward as the rostrum. An acute spine on the upper anterior margin of orbit, and a much smaller post-orbital. Antero-lateral spines three, beside the post orbital; the second and third forming the wing-like expansions of the carapax. Of these, the second is the largest, and the third is short anteriorly, but has a long thin posterior border. Upper surface of rostrum with two rows of hairs. Ten tufts of hairs on the gastric and intestinal regions, corresponding to the tubercles of those surfaces. Postero-lateral and posterior margins of carapax with a row of tufts of hairs. Chelipeds of equal proportions in both sexes, very slightly longer than the second pair; arm tubercular above, carpus ditto, manus smooth and slender; dactyli in contact, in female, gaping in male; the parts in contact serrated on inner edge, extremities pointed. Hinder pairs beset with spines, each spine terminating in a bunch of hairs. Abdomen of female surrounded by a fringe of hairs.

Localities: La Paz, San José Island, Port Escondido, Gulf of California.

	♂ M. M.	♀ M. M.
Length of carapax	22	24
Width of " across lateral expansions.	23	26

Almost all the specimens are female, their abdomens laden with ova. They were taken in August or September.

No. 14. Male and female, in spirits. Fisher and Lockington.

12. *Pisoides? celatus*. nov.-sp. = *Microphrys platysoma* A.M. Ed.

Carapax triangular ovate; branchial, cardiac and stomachal regions prominent, tumid; rostrum short, bifid to base; fossettes and inner antennae small; fixed joint of external antennae very broad, with a long spine as its outer exterior border, this spine forming part of the orbit. A spine upon the upper surface of the carapax slightly behind that of the fixed antennal joint, yet somewhat in advance of the eye, this (pre-orbital) spine divided by a triangular notch from the post-orbital, behind which, on the antero-lateral border, are two smaller spines. On each branchial region a group of two or three conspicuous spines, and some smaller ones on the posterior margins. The ciliate movable joints of outer antennae as long as rostrum, flagella about

three times as long as rostrum. Upper surface of carapax hirsute, especially upon the rostrum. Hinder part of sternum and abdomen tomentose. Chelipeds almost as long as second pair, without hairs; merus with about four teeth on its superior margin; carpus slightly tubercular; manus perfectly smooth. The movable finger occasionally has a tubercle between the base and the tip. Movable and fixed fingers serrated for half their length and interlocking on their outer margins. Hinder feet hirsute, short, a spine on the upper surface of the fourth joint of second and third pairs.

Color, reddish-brown above, the hands and under parts white, marbled with bright red, the latter predominating on the upper surface of the chelipeds.

Localities: La Paz, Mulege Bay, Port Escendido, San José Island, all in the Gulf of California.

It is found under stones at low tide, and was also brought up at La Paz by the dredge.

The females have no tubercle on the inside of the dactyli, and the spines upon the branchial region are not prominent. They were with ova when collected, in the month of August.

	♂ M. M.	♀ M. M.
Length of carapax	20	13
Width of carapax	17	12

The females are rather less elongated than the males. The carapax in both sexes is exceedingly overgrown with corallines, sponges, sertularia, etc.

No. 16. Two males and two females, in spirits. Fisher and Lockington.

This little crab evidently belongs to the *Pisinae*, but does not fit well into any of the genera given by Dana. The characters are nearest those of *Pisoides* and *Herbstia*, but from the former it differs in the presence of a pre-orbital spine, and from the latter in the great width of the fixed joint of the external antennæ, as well as in the small size of the chelipeds.

I think it not unlikely that this form is the *Herbstia parvifrons* of Dr. Randall, (Proc. Phil. Acad. Sci., 1869, p. 107), but his description is so short that it is impossible to be certain; so far as it goes, however, the characters given agree.

Microphrys?

13. *Pisoides? tumidus*. Lockington, Proc. Cal. Acad. Sci., Feb. 6, 1876.

I have received specimens of this species from San Bartolomé Bay and Magdalena Bay, all of them smaller than the type in the possession of the Academy. Those from Magdalena Bay were dredged in three fathoms.

The first article of the external antennæ is acute on its outer angle, but can scarcely be called a spine, the second and third are long, ciliated, and cylindrical, in the last character differing from the generic description given by Dana.

No. 6. Female. San Diego, between tides. Hy. Hemphill.

LIBININÆ.

Libinia canaliculata? Say.

14. *Libinia affinis?* Randall. Jour. Acad. Nat. Sci., Phil., VIII, 107. Gibbes, Proc. Am. Asso., 1850, p. 170. Stimpson, Crust. and Echi. Pac. S. N. A., 14. Hale Streets, Proc. Acad. Nat. Sci., Phil., 1870 p. 170.

I have lately found among the crustacea collected by Mr. Fisher, two fine specimens of a *Libinia*, from San Bartolomé Bay, Lower California. They are much larger than the specimens described by Randall, and without tubercles interspersed among the spines. The species consist of a central dorsal row of eight, the first of which is the central one of a transverse row of three on the anterior portion of the gastric region. Two of the dorsal row belong to the cardiac, and one to the intestinal region. Nearly in a direct transverse line with the first cardiac spine are two others on each branchial region; and in a direct transverse line with the second cardiac spine are a blunt spine or tubercle and two spines on each branchial region, thus forming a row of seven. Right and left of the intestinal spine is a small one on the posterior part of each branchial region. Rostrum but slightly cleft, setose at extremity and on upper surface, not at all deflected; ante-orbital spine much smaller than post-orbital, which is broad and curved posteriorly; two spines on each antero-lateral margin, and two smaller ones near together on each hepatic region, in a line between the anterior antero-lateral spine and the transverse row on the stomach. The outermost spine of the transverse row of seven is the largest. The feet are without spines or tubercles. The largest specimen measures as follows:

	M. M.
Length of carapax	52
Width of carapax, without measuring the spines	39

Both the specimens are female.

I have never seen a specimen of *L. canaliculata*, nor Randall's specimen of *L. affinis*, but it is unusual to find an Atlantic species existing unaltered at such a point as San Bartolomé Bay, remote both from the Isthmus of Panama and from Behring's Straits, and for this reason I should not be surprised if it should prove distinct, in which case I propose for it the specific name *setosa*, on account of its setose rostrum.

This is new, but stands as L. setosa Lock. Streets has since described it as

MICROPINE.

15. *Micippa ovata*. ~~nov. sp.~~ = *Otelionia Picteti* De Saussure

Carapax ovate, truncate in front, front narrower than in *M. hirtipes*, Dana. Post-orbital spine in the same line with pre-orbital, the two separated by a triangular notch. Antero-lateral margin with five sharp spines directed forwards, excluding the post-orbital, the lateral edge of which is elongated. Upper surface of carapax arched transversely, almost semicircular in section; tubercles numerous, but without spines. Chelipeds short, smooth, fingers serrate at tip. Hairs sparsely scattered on hinder feet and carapax, rostrum pilose, especially round the margin.

Localities: Port Escondido, Mulege Bay, Los Angeles Bay, San José Island, La Paz.

	M. M.	♀
Length of carapax	21	19
Width of carapax at third antero-lateral spine	18	16
Length of first pair	19	12.5

Var. *levis*.

Rostrum, orbits, antero-lateral spines, and limbs exactly as previously described, but the carapax more broadly ovate, and without tubercles, and the chelipeds much larger in the male.

M. M.

Length of carapax.....	21
Greatest width at fourth antero lateral spine.....	19.5
Length of first pair.....	20

This is a well-marked species, and exceedingly elegant in appearance. The male which I have described as var. *levis* is the largest among several from various localities. The smooth carapax and large chelipeds render it conspicuous among the others, yet I am inclined to believe these characters only varietal, and not improbably only individual.

No. 20. Male and female, in spirits. Gulf of California. Fisher and Lockington.

CHORININÆ.

16. *Chorilia longipes*. Dana. U. S. Ex. Exp., 1, p. 81, pl. 1, fig. 5. Stimpson, Crust. and Echi. Pac. S. N. A., 14.

17. *Seyra acutifrons*. Dana. U. S. Ex. Exp., vol. I, p. 95, pl. 11, f. 2 Stimpson. Crust. and Echi. P. S. N. A., 15.

No. 7. A single dried specimen from San Diego, by Henry Hemphill, caught between tides.

Chorilibinia. nov. gen.

Rostrum long, broad, and emarginate at tip as in *Libinia*, but the eyes concealed beneath it as in *Chorinus* and its allies. Pre- and post-orbital spines acute, separated above and below by an acute fissure, and together constituting the orbit. Carapax triangular.

18. *Chorilibinia angustus*. nov. sp.

Carapax triangular, narrowing gradually to the region of the eyes, the orbits of which are salient. Rostrum long, emarginate at tip, the bifurcation divergent, extending only one-third the length of rostrum. Fixed joint of external antennæ terminating outwardly in a long spine which precedes the pre-orbital when looked at from above. Pre-orbital spine large, acute, separated from the acute post-orbital by an acute fissure, both above and below. Antero-lateral margin with three spines beside the post-orbital, the largest spine at the angle between antero- and postero-lateral margins. Tubercles of carapax prominent, each culminating in a single spine. A tubercle with spine on the posterior angle. Movable basal joints of outer antennæ setose, slender, cylindrical. Chelipeds slender, about the same length as second pair; merus (arm) with four tubercles above; manus smooth, slender; dactyli small, slender, in contact most of their length, serrate on inner border. Four hinder pairs rounded, slender, second much the largest; claws sharp.

The whole of the upper and under surface, except the inner side of the hand and upper surface of the rostrum, tomentose, with longer hairs at intervals, and a row of the latter on each side of the rostrum.

Locality, Gulf of California.

	♂ M. M.	♀ M. M.
Length of carapax ..	20	23
Greatest width of carapax ..	12	15

Out of the three specimens in my possession the female is the largest, but has the rostrum shorter than the males.

19. ~~*Odonia picta*. De Saussure, Revue et Magasin de Zoologie, V, 331, pl. XIII, f. 2.~~

MITHRACIDÆ.

20. *Mithrax armatus*? ~~De Saussure, Revue et Magasin de Zoologie, V, 335, pl. XIII, f. 1.~~ = *Herbstiella camptacantha* ^{ac}

Either this species or the succeeding is most probably the *M. armatus* of De Saussure, but for the reasons given more fully under the next species, I cannot be certain of its identity, and therefore subjoin a description.

Rostrum bifid, the horns not lamellate; carapax broadly pyriform; verrucose throughout its upper surface, the verrucæ becoming spinose on the posterior portion of the carapace. Exterior side of the fixed joint of outer antennæ with a long spine at the extremity, followed by a shorter. A short pre-orbital spine, separated by a deep notch from the post-orbital. Margin of carapace with five large spines besides the post-orbital, four upon the antero-lateral, the fifth upon the postero-lateral margin. A second row of smaller spines upon the sub-branchial region. First pair of limbs short; dactyli not tapering, obtuse and imperfectly spoon-shaped at end; propodus oblong, more than twice as long as wide, smooth; carpus and merus spinose above, but without the smaller tubercles found on the carapax. Four hinder pairs slender, cylindrical; merus and carpus spinose above like those of first pair; propodus slightly hirsute, smooth; terminal joint (dactylus, tarsus) hirsute, ending in a recurved claw of an orange color. Abdomen six-jointed in the female. The whole of the upper surface of carapax and limbs, between the spines and tubercles, is finely punctate; and the whole of the lower surfaces tomentose.

A single female from Mazatlan, presented by Hy. Edwards, is the only specimen I have seen of the species.

	M. M.
Length of carapax to tip of rostrum ..	32
Width of carapax from tip to tip of fourth marginal spine ..	30
Length of first pair ..	28
Length of second pair ..	32

Color of the specimen a light flesh tint.

No. 3. Female, dry. Mazatlan. Hy. Edwards.

This specimen of *H. camptacantha*, older & larger than ^{10th} ~~it~~ ^{has} ~~it~~ ^{differs} ~~from~~ ^{from} ~~the~~ ^{the} ~~typical~~ ^{typical} ~~one~~ ^{one} ~~described~~ ^{described}. The "posterior lateral spines" are only small tubercles. There is no tooth in the center of the cleft lying the 1st & 2^d spines. ~~It is confirmed to the male~~

21. *Mithrax areolatus*. nov. sp.*Is this M. dichotomus?*

The only species of *Mithracinæ* that have been, to my knowledge, previously described from this coast are the *Mithrax armatus* of De Saussure, and the *Mithraculus coronatus* of White and Stimpson.

De Saussure's description is not accessible to me, and the only mention I have of the species is in Stimpson's Crust. and Echi. Pac. Shores N. A., where the reference is given, and the locality (Mazatlan) of the specimen in the Mus. Phil. Acad.

Mithraculus coronatus finds a place in the "Catalogue of Crustacea from the Isthmus of Panama, collected by J. A. McNeil," by T. Hale Streets, but that author does not state from which side of the Isthmus his specimens came. I find the same species in S. I. Smith's "Brazilian Crustacea," from which I infer that it is not unlikely McNeil's specimens were from Aspinwall.

Dana says of *Mithrax*: "*Articulus antennarum externorum Imus apice externo, duabus spinis longis armatus*," but the antennal spines in *M. dichotomus* of the Mediterranean are very short, as they are in the present form. *Mithraculus*, however, is stated by Dana to be without long antennal spines.

As the antennal spines in this species are evident, but are rather teeth or lobes than spines, I assume that I have before me either De Saussure's *Mithrax armatus* or a new species—most probably the latter, more especially as, besides the doubtful locality, the proportions of the carapax given by S. I. Smith for his specimens of *Mithraculus coronatus*, do not agree with the present species, which has the length and breadth more nearly equal. I subjoin a short description:

Carapax almost orbicular, slightly wider than long; front four-lobed, the pre-orbital teeth projecting almost level with the two central lobes which constitute the rostrum. Fixed joint of outer antennæ with two obtuse teeth on its outer apex. Antero-lateral margin with five teeth, including the post-orbital, third tooth largest.

Regions of carapax very distinct and subdivided into areolets answering to those of the *Xanthinæ* and *Chlorodinæ*; areolets with punctate surface, without spines or teeth, and almost free from hair. Merus and carpus of first pair with spinose tubercles, hand smooth, cristate above. Those of female similar but smaller. Posterior feet beset with spines on their exposed surfaces, and densely pilose.

	♂	♀
	M. M.	M. M.
Length of carapax.....	16	13
Breadth of ditto.....	18.5	15

Localities—Port Escondido, San José Island, Gulf of California. Found at low tide under stones and coral. Color, in spirits, light red.

If this species should prove to be new, I propose to name it *Mithrax areolatus*. The females, when collected in the month of August, were loaded with ova.

No. 13. Male and female, in spirits. Gulf of California. Fisher and Lockington.

Fisheria. nov. ger. *Microplrys* *M. Edwardsi*

Carapax orbiculo-ovate, depressed, with short preorbital and post-orbital spines. First joint of outer antennæ wide, terminating outwardly in a long spine, which is followed by three others, which form the inferior margin of the orbit. Chelipeds of male, $2\frac{1}{2}$ times the length of carapax; those of female shorter than the second pair. Fingers serrate, obtuse and imperfectly spoon-shaped at tip.

This genus is evidently nearly allied to *Mithrax*, but the great length of the first and second pairs of limbs in the male, as compared with the carapax, and the row of teeth on the external margin of the fixed antennal joint, appear to necessitate its separation. The general aspect of the single species here described is totally different from that of *M. dichotomus* or *M. asper*, which are the only two species I have seen figured.

22. ^{*Microplrys*} *Fisheria depressa*. nov. sp.

Male—Carapax depressed, widely pyriform, the regions marked by slight elevations granulated on the summit, the margins and spaces between the elevations somewhat tomentose. Rostrum bifid, short, reaching to the centre of the terminal joint at base of outer antennæ. A long spine at the external angle of the fixed joint of outer antennæ, succeeded by three smaller spines. Movable base of outer antennæ as long as flagellum, second joint largest, second and third joints slender, cylindrical.

Upper surface of carapax almost spineless, margins and orbits spinous. Orbit with two teeth above and four acute spines below, the two anterior of which belong to the fixed joint of antennæ. A row of teeth on the hepatic region, continued outwards from the maxillipeds.

Chelipeds of male enormously long, ischium produced into an acute spine on its anterior border; meros rounded, as long as post-rostral portion of carapax, beset with acute spines on its upper surface; carpus short, tuberculated; manus slightly longer than entire length of carapax (measuring to the end of the fixed finger); entirely smooth, compressed and broad, with rounded upper and lower edges; dactyli gaping, their obtuse ends imperfectly spoon-shaped and serrated, movable finger with a tubercle at half its length on inner border. Second pair $1\frac{1}{2}$ times as long as carapax, meros similar to that of first pair, with a row of about ten long spines on its upper surface, and a single spine on the distal extremity of its lower; carpus with a few spines; propodus very slender, entirely unarmed. Three hinder pairs similar to second pair, all with a single spine at distal end of underside of meros. Four hinder pairs sparsely hirsute above.

	M. M.
Length of carapax.....	27
Width of ditto.....	24
Length of first pair.....	68
Length of manus of ditto.....	33
Length of second pair.....	42
Length of fifth pair.....	33

These measurements are taken from the largest of six male specimens from Port Escondido, Lower California.

Female—Carapax as in male. Chelipeds shorter than second pair, fingers less widely gaping, no tooth on movable finger. In other respects as in male.

	M. M.
Length of carapax.	21
Width of ditto	18
Length of first pair.	24
Length of second pair.	29

These dimensions are taken from the largest of eight specimens from Port Escondido and San José Island, Gulf of California.

Color, in spirits, bright red, the smooth manus, undersides of legs, and buccal apparatus especially bright.

No. 21. Male and female, in spirits. Fisher and Lockington.

23. *Mithraculus triangulatus*. nov. sp.

Carapax as broad as long; in form an acute isosceles triangle truncated in front; regions prominent, antero-lateral margin with three lobes. Rostrum very short, bifid, scarcely projecting beyond the line of the fixed joint of the outer antennæ, which terminates in a blunt tooth, followed by a second tooth or rather lobe, forming part of the lower margin of the orbit. Outer antennæ ciliate, movable basal joints cylindrical, short; second joint considerably stouter than the third. Lower margin of orbit formed by the teeth belonging to the fixed antennal joint, followed by a small tooth intervening between them and the post-orbital. Pre-orbital tooth scarcely evident, forming the obtuse termination of the elevated orbital region.

Chelipeds stout, longer than the second pair by almost the length of the hand, arm tubercular above, hand and carpus smooth, the former broad and heavy, stouter than the arm; dactyli obtuse and spoon-shaped at end, the movable one with a single tubercle on the inner margin.

Hinder limbs tubercular on upper surface; carapax and chelipeds without tomentosity, but a few hairs scattered on the hinder limbs. Females much smaller than males; the chelipeds small, about equal in length to the second pair.

Locality—Gulf of California.

	♂ M. M.	♀ M. M.
Length of carapax.	16	13.5
Length of first pair.	27	11.5
Length of second pair.	15	12
Width of carapax across the posterior portion, where widest. . .	14	12

The areolets of the carapax are prominent, but without spines; but the two largest posterior lobes of the antero-lateral margin are tubercular, and there are a few small tubercles on each postero-lateral margin.

Color, in spirits, uniform reddish.

No. 15. Several specimens, both sexes, in spirits. Fisher and Lockington.

24. *Mithraculus coronatus*. Stimpson. Amer. Jour. Sci., second ser., XXIX, 1860, p. 132; Am. Lyc. Nat. Hist., New York, VII, p. 186; White (?), List. Crust. Brit. Mus., p. 7; T. Hale Streets, Proc. Acad. Nat. Sci., Phil., Dec. 5, 1871, p. 239.

This species is mentioned by Hale Streets in his "Catalogue of Crustacea from the Isthmus of Panama, collected by J. A. McNeil," but that author does not state whether the specimens were from the Pacific or Atlantic shore of the Isthmus. It is found at Aspinwall and along the Brazilian coast.

TYCHIDÆ.

25. *Tyche brevirostris*. Nov. sp.

this T. lamelligera, Bell.

Carapax an elongated rectangle with sinuate sides; rostrum short, depressed; laminate; pre-orbital spine long, elevated, produced almost as far forwards as the rostrum when viewed from above. A thin broad lobe behind the pre-orbital spine, concealing the elongated eyes except at the tip. Fixed joint of outer antennæ narrow, and boldly relieved from the surrounding parts, second and third joints cylindrical. Peduncles of eyes inserted level with the fixed joint of antennæ. Anterior portion of carapax bent downwards, posterior portion shield-shaped, the lateral and posterior margins overhanging, the latter thin. First pair of limbs shorter than second, scarcely projecting beyond the carapax. Second pair about as long as carapax, slender; succeeding pairs similar.

and continued with

the anterior portion of the posterior end of the rostrum.

M. M.

Length of carapax..... 17
Width of ditto 11

A single female specimen from Port Escondido, Gulf of California.

The general aspect of this little crab is that of a dried leaf; the anterior portion, deflected and somewhat pilose, does not attract the eye, while the shield-shaped posterior portion is very conspicuous. From the central tubercle of the gastric region, which is the most elevated portion of the carapax, a ridge is continued outwards on each side to the margin of the carapax, the surface of which is increased by expansions with sinuate edges. The whole of this leaf-like posterior surface is inclined in the opposite direction to the frontal portion. The pre-orbital spines project like a pair of horns immediately in front of the eye-shields, each of which is an obtuse isosceles triangle with its apex directed laterally.

As the specimen is a female it is impossible to be certain whether the small chelipeds are characteristic of the species, or of the sex only. I have placed this species in the genus *Tyche* of Bell, with which it has the following characters in common: Eyes without orbits, hiding below the carapax, which is oblong, wide in front and broad across the orbits, depressed, without post-orbital spines, and with pre-orbital spines produced to a line with the rostrum; first joint of external antennæ long, unarmed.

This form differs, however, from the generic description as given by Dana, in the shortness of the rostrum, which is bent downwards, but not more so than the anterior portion of the carapax.

EURYPODIDÆ.

26. *Oregonia gracilis*. Dana. U. S. Ex. Exp., I, 106, pl. III, f. 2. Stimpson. Crust. and Echin. Pac.-S.-N. A., 16.

27. *Oregonia kirta*. Dana. U. S. Ex. Exp., I, 107, pl. III, f. 3. Stimpson. Crust. and Echi. Pac. S. N. A.

Both the *Oregonia* are found in deep water. Locality, Puget Sound. I have not seen either of these species.

28. *Leptopodia debilis*. S. I. Smith. Rep. Peabody Acad. Sci., 1869. Panama, Pearl Islands.

A single specimen of this species was found in Mr. Fisher's collection, from the Gulf Coast of Lower California.

29. *Inachoides (Microrhynchus) Hemphilli*. Lockington. Proc. Cal. Acad. Sci., February 7, 1876.

I have been in some doubt whether to refer this species to *Inachoides* or *Microrhynchus*, but as the eyes are tolerably elongated and do not appear to be retractile within the small orbits, I prefer the former. On the other hand, it differs from both genera in the absence of a post-orbital spine, unless a single spine on the antero-lateral margin, situated almost the length of the rostrum behind the eyes, can have a right to that name. The rostrum is one-fourth the length of the posterior portion of the carapax. The want of a post-orbital spine scarcely warrants the establishment of a new genus, but the definition of the genus *Inachoides* must, to admit it, be altered slightly, thus—

Inachoides. Edwds and Lucas. Carapax valde gibbosus rostro longiusculo, acuto, spina post-orbitali parva aut nulla. Pedes 8, postici sat longi, gracillimi. Articulus antennarum externarum Imus angustus.

The words *aut nulla* admit the present species. Localities—San Diego, San Luis Obispo, both in Upper California; La Paz, where it has been dredged from a bottom of sand and mud; San José Island; Amortiguado Bay; Port Escondido; Mulege Bay— all in the Gulf of California. The largest specimen I have seen, a male, exceeds in size the type in the possession of the Academy. The dimensions are as follows:

	M. M.
Length of carapax, including rostrum.	34
Greatest width of ditto	13
Length of first pair	40
Length of second pair	70

One of the largest females measures 15 M. M. in length and 8 in width. The carapax of this species is free from the parasitic growth, often so abundant on maoid crabs.

No. 2. Male; San Diego, 7 fms. Hy. Hemphill.

30. *Inachoides brevirostrum*. nov. sp.

Carapax pyriform, the regions in the central line of the body more elevated than the lateral regions. Rostrum short, simple, consisting of the spinous termination of the septum dividing the fossettes of the inner antennae. Opposite the anterior extremity of each fossette an acute tooth, so that the res-

~~ten~~ is somewhat trifold. Eyes long, not retractile. A small pre-orbital spine. Fixed joint of external antennæ prolonged externally into a short but acute spine; movable joints not concealed under the rostrum. First pair of feet shorter than the second in the male, than the third in the female; slender, cylindrical, the dactyli straight, in contact throughout their whole length, and almost equal in length to the manus. Four hinder pairs slender, cylindrical, the second rather more than $1\frac{1}{2}$ times the entire length of the carapax. Carapax and abdomen tomentose, chelipeds tomentose, four hinder pairs ciliate, sides of rostrum ditto. Locality, Magdalena Bay, L. C.; dredged at a depth of three fathoms. Four females and one male.

	♂
	M. M.
Length of carapax.....	9.5
Width of ditto.....	6.

The females are wider in proportion than the males. Notwithstanding the comparative shortness of the rostrum, and also of the carapax, the characters of the eyes and antennæ prove this species to be an *Inachoides*.

PERICERIDÆ.

PERICERINÆ.

31. *Pugettia gracilis*. Dana. U. S. Ex. Exp., I, 117, pl. IV, f. 3. Stimpson. Crust. and Echi. Pac. S. N. A., 16.

Localities—Puget Sound, Vancouver's Island; Mutiny Bay, Alaska; San Luis Obispo.

No. —. Male, in spirits, Vancouver's Island.

No. 19. Female, in spirits, Mutiny Bay, Alaska. Presented by Alaska Commercial Company.

32. *Pugettia Richii*. Dana. U. S. Ex. Exp., I, 117, pl. IV, f. 4. Stimpson. Crust. and Echi. Pac. S. N. A., 17.

The only locality at present certainly known for this crustacean is San Diego. Dana says of his specimen, "From California."

No. 9. Several dried specimens from San Diego. Henry Hemphill.

33. *Pellinia longiocularis*. nov. sp.

Posterior portion of carapax broadly triangular, post-orbital spine expanded, trans-orbital width rather less than half the greatest width; rostrum short, stout, bifid. Stomachal region prominent. Fixed joint of external antennæ emarginate at apex, the outer tooth acute, not longer than the inner. Peduncles of eyes about equal in length to the distance between the eyes. First pair of feet about equal in length to the second and to the length of the body; meros tuberculate; hand thin, broad, smooth, marbled; fingers touching at the extreme tip only; a tooth on the inside of the movable finger near its base.

Is this Eucinetops lucasii 3^d male?

It agrees pretty well with 3^d description of the female, with his figure, which is that of a male. Perhaps of another species.

Four hinder pairs short, slender, cylindrical, setose, except the tarsus, which is smooth and shining, like the manus of the first pair. Carapax and abdomen tomentose above and below. A single specimen, male, found among a number of another species from different localities, so that its locality is uncertain, further than that it is from Lower California. Length and breadth nearly equal, about eight millimetres.

This species differs from *Peltinia*, Dana, in the length of the eyes. The antennæ are not hidden by the rostrum, so that it is impossible to place it among the *Epialtine*. It appears to me to be in its characters intermediate between *Acanthonyx* and *Epialtus*, and therefore should find a place in *Peltinia*, but to accommodate it the character, "*Eyes not retractile, short*," must be changed to "*Eyes not retractile, of variable length*."

EPIALTINE.

34. *Epialtus productus*. Randall. J. A. N. S. Phil., VIII, 110. Gibbes. Proc. Am. Asso., 1850, p. 173. Dana. U. S. Ex. Exp., I, 133, pl. VI, f. 2.

The figure in Dana's work represents the female, which differs so much from the male that it might easily be mistaken for a distinct species. The largest specimen in this collection is a male from Santa Rosa Island, Cal., collected and presented by W. G. W. Harford. This specimen displays well the differences between the sexes. It is armed with a large pair of chelipeds, the hand and fingers of which equal in length the breadth of the carapax. The four hinder pairs of legs are long and slender, and the carapax in all its dimensions greatly exceeds that of the female.

No. 4. Male, fine specimen, dried. Santa Barbara. W. G. W. Harford.

No. 5. Female, dried. Donor unknown.

35. *Epialtus Nuttallii*. Randall. *loc. cit.*, VIII, 109, pl. III. Gibbes. *loc. cit.*, p. 173.

It is rather strange that this crustacean should not have found its way into our collection. Randall gives "Upper California" as its locality.

36. *Epialtus minimus*. Lockington. nov. sp.

Rostrum larger than usual in the genus, the emarginated extremities divergent. Trans-orbital width small. No pre-orbital or post-orbital spine. Antero-lateral margin with two triangular teeth, the anterior much the largest, their front margin at right angles to the carapax. Without the anterior of the teeth, the form of the carapax would be triangular. Distance from the anterior line of the first teeth to tip of rostrum about equal to the posterior portion of the carapax. First pair of feet in the male longer than the second, fingers obtuse and imperfectly spoon-shaped at their tips. Eight posterior feet slender, cylindrical, naked, except terminal joint, which is fringed below with short setæ. Penultimate joint with one or two small spines on

the under side. Localities—Port Escondido, San Jose Island, both in the Gulf of California. Found at low tide under stones and in coral.

	♂	♀
	M. M.	M. M.
Length of carapax.....	14	14
Width of ditto.....	11	12
Length of first pair.....	18	..

The carapax of the largest female is stouter and broader than that of the largest male, but the latter more than makes up for this deficiency by the extra length of his chelipeds. In some of the females the manus is tuberculated, but is smooth in the males and in other females.

No. 17. Male and female, in spirits. Fisher and Lockington.

PARTHENOPIE.

37. *Parthenope (Lambrus) punctatissima*. Owen. Zool. Beechey's Voyage, 81, pl XXIV, f. 4. Stimpson. Crust. and Echi. Pac. S. N. A., 18.

38. *Lambrus frons-acutis*. Lockington. Proc. Cal. Acad. Sci., Feb. 7th, 1876.

From Boca de Los Piedras, Sinaloa, Mr. W. J. Fisher brought two small specimens.

No. 8. Santa Catalina Island. Hy. Hemphill (dried).

39. *Cryptopodia occidentalis*. Dana. Am. Jour. Sci., 2d ser., XVIII, 430. Gibbes. Proc. Elliott Soc. Nat. Hist., Charleston, S. C. Stimpson. Crust. and Echi. Pac. S. N. A., 18.





